

THE MINERAL INDUSTRY OF

TUNISIA

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Producing and processing of crude oil, mining of phosphate rock, and manufacturing of phosphate-based fertilizer products were significant segments of the Tunisian minerals economy. The gross domestic product (GDP) at current (2000) prices of this North African nation was estimated to have been more than \$19 billion¹ in 2000 (Central Bank of Tunisia, 2001, p. 42). Hydrocarbon production and processing accounted for about 3% of the GDP, and mining and solid mineral processing accounted for about 1%.

The value of total exports during 2000 was reported to be about \$5.8 billion. The value of exports of cement, phosphate-based fertilizers, phosphate rock, salt, zinc, and other minerals was estimated to be \$542 million. The value of crude oil and petroleum products was about \$1 billion. For 2000, the total value of imports was estimated to be \$8.6 billion, of which imports of mineral fuels accounted for \$873 million (Central Bank of Tunisia, 2001, p. 105, 113).

Commodity Review

Metals

Iron and Steel.—Iron ore production declined in 2000. Société du Djebel Djerissa produced about 76% of its iron ore output from the underground Djerissa Mine and about 24% from the open pit Tamera-Douaria operation. The Société Tunisienne de Sidérurgie's steel plant at El Fouladh produced record volumes of cast iron [195,600 metric tons (t)] and steel (237,000 t). National imports of steel sections and bars also increased to 715,200 t in 2000 from 697,000 t in 1999 (Central Bank of Tunisia, 2001, p. 67, 115; Institut National de la Statistique, 2001, p. 12). During 2000, Danieli Morgårdshammar S.A. began the installation of a five-stand continuous finishing mill at the Intermetal S.A. steel bar and section mill in Tunis.

Lead and Zinc.—Lead and zinc have been mined intermittently in Tunisia since Roman times. Breakwater Tunisia S.A. operated the underground Bougrine lead-zinc mine. Additional lead-zinc ore was mined at the Boujabeur Mine of Société Minière du Nord-Ouest and at Nar d'Hal. In 2000, Breakwater produced 72,246 t of zinc concentrates that contained 38,303 t zinc and 9,418 t of lead concentrates that contained 6,215 t lead from the 422,120 t of ore it milled (Breakwater Resources Ltd., 2001a, p. 22). Breakwater undertook several exploration drilling programs; these included underground drilling in the mine, which confirmed the potential

of deeper ore; exploratory drilling of the Kebbouch-Sud property; delineation drilling of the shallow F1 ore body; and a deep exploratory drilling program at Bougrine. Breakwater also was building a desalinization plant at the mill.

International interest in developing Tunisian lead-zinc deposits continued to grow during 2000. Aurora Gold Corp. of the United States acquired additional zinc prospects, which included the El Mohguer, the Hammala, and the Jebel Oum Edeboua prospects, from High Marsh Holding Ltd. of the British Virgin Islands and applied to the Government for 10 exploration permits in the Kebbouch District adjacent to the Hammala property. Subsequently, Billiton UK Resources B.V. concluded negotiations for the right to earn 51% of Aurora Gold's interest in the Hammala zinc property and the 10 contiguous exploration permits to the Hammala property. By the end of May, Aurora Gold had transferred its Tunisian mineral interests to Aurora Metals (BVI) Ltd. In September, after a summer of reconnaissance mapping, soil and stream sediment sampling, and geophysical surveying, Aurora Metals terminated its option on High Marsh's El Mohguer, the Hamman Zriba/Jebel Guebli, the Jebel Oum Edeboua, the Koudiat Sidii, and the Ouled Moussa properties.

In 1999, High Marsh optioned its interest in the Djebba zinc-lead property to CSI Capital Solutions Inc. and its interest in the Fej Lahdoum zinc property to Consolidated Global Minerals Ltd. In March 2000, Consolidated Global Minerals acquired an option on CSI Capital Solutions' interest in Djebba. In June, Consolidated Global Minerals formed a joint venture with International Bravo Resource Corp. for the exploration of the Djebba property. Prior evaluation of the property for the Government had resulted in a resource estimate of 2.66 million metric tons (Mt) at a grade of 6.14% zinc and 3.34% lead (International Bravo Resource Corp., 2001, p. 3).

Industrial Minerals

Cement.—Privatization of Government cement plants continued in 2000. Société des Ciments Artificiels de Tunis was sold to Colacem S.p.A. of Italy. Secil-Companhia Geral de Cal e Cimento, S.A., of Portugal acquired Société des Ciments des Gabés, and Société des Ciments d'Oum el-Kélil was sold to a Portuguese group.

Phosphate.—In 2000, open pit mining accounted for about 90% of the 12.9 Mt of crude phosphate rock that the Compagnie des Phosphates de Gafsa mined primarily from the Kef Eschfair Mine, which accounted for 29.5% of total ore volume; the Kef Eddour Mine, 19.6%; and the Jallabia Mine, 18.2%. The underground M'rata Mine was closed in 2000. The company produced more than 8.3 Mt of washed phosphate rock; this

¹Where necessary, values have been converted from Tunisian dinars (TD) to U.S. dollars at an average rate for 2000 of TD1.372=US\$1.00.

record production was aided by the increased yields from the washing plants (64.4% in 2000 compared with 63.3% in 1999). Reduced local demand resulted in the stockpiling of about 1 Mt of phosphate in 2000 and left the company with a 2.7-Mt stockpile of marketable phosphates at the end of the year (Central Bank of Tunisia, 2001, p. 57).

Groupe Chimique Tunisien responded to the drop in international market demand for phosphoric acid with increased diammonium phosphate production.

Salt.—In 2000, reported salt production ranged from 481,000 to 620,000 t (Central Bank of Tunisia, 2001, p. 57; Institut National de la Statistique, 2001, p. 13). Salt was produced from the Sfax salt flats (about 59% of total Tunisian salt production), the Sousse salt flats (22%), and the Zarzis salt flats (19%). No salt has been produced from the Megrine salt flats since 1998.

Mineral Fuels

In 2000, increased production of natural gas, which was primarily from the offshore Miskar Field, reached 2,220 million cubic meters (Institut National de la Statistique, 2001, p. 14). The Tarfa gasfield began production in April, and the Oued Zar Field, in July. British Gas Tunisia Ltd. continued the expansion of the Hannibal gas plant, which treated gas from the Miskar Field.

Crude oil production from the major Tunisian oilfields continued to decline. Production from El Borma Field dropped by 17.2%, and that from the offshore Ashtart Field, by 12.2% (Central Bank of Tunisia, 2001, p. 61). In 2000, eight exploration wells were drilled onshore, and one, offshore; two discoveries were made. Nuevo Energy Co. acquired interest in the Anaguid and the Fejaj permits from Bligh Tunisia Inc. Athanor Tunisia B.V. acquired MOL Tunisia Oil and Gas Co. Ltd.'s interest in the Kebili permit and the Sabria production area.

Tunisian oil exports benefited from rising international prices of crude oil. In 2000, the average price of exported crude was \$28.55 per barrel compared with \$17.64 in 1999 and \$12.06 in 1998 (Central Bank of Tunisia, 2001, p. 61).

Reserves

In 2000, proven and probable reserves at the Bougrine Mine were 1.975 Mt at a grade of 11.2% zinc and 2.1% lead (Breakwater Resources Ltd., 2001b, p. 33). Crude phosphate rock reserves were estimated to be 100 Mt (Jasinski, 2001). Crude petroleum reserves were estimated to be 308 million barrels, and reserves of natural gas, about 78,000 million cubic meters as of January 1, 2000 (U.S. Energy Information Administration, June 2000, Tunisia—Energy overview, Country Analysis Briefs, accessed October 2, 2000, at URL <http://www.eia.doe.gov/emeu/cabs/tunisia.html>).

References Cited

- Breakwater Resources Ltd., 2001a, 2000 annual report: Toronto, Breakwater Resources Ltd., 65 p.
———2001b, Form 20-F—Fiscal year 2000: U.S. Securities and Exchange Commission, 120 p.
Central Bank of Tunisia, 2001, Annual report—2000: Tunis, Central Bank of Tunisia, 221 p.
Institut National de la Statistique, 2001, Bulletin mensuel de statistique: Tunis, Ministère du Développement Economique, No. 529, January, 41 p.
International Bravo Resource Corp., 2001, Annual information form: Vancouver, International Bravo Resource Corp., 19 p.
Jasinski, S.M., 2001, Phosphate rock: U.S. Geological Survey Minerals Commodity Summaries 2001, p. 120-121.

Major Sources of Information

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TABLE 1
TUNISIA: PRODUCTION OF MINERAL COMMODITIES 1/ 2/

(Thousand metric tons unless otherwise specified)

Commodity 3/		1996	1997	1998	1999	2000
METALS						
Iron and steel:						
Iron ore and concentrate, gross weight		238	252	220	219 r/	182
Fe content		129	137	119	119 r/	98
Metal:						
Pig iron		151	152	123	180	196
Steel, crude		187	195	171	229	237
Lead, mine output, Pb content	metric tons	4,764	1,424	4,272	6,589	6,602
Silver metal, primary e/	kilograms	3,000	300	2,500	4,000	3,700
Zinc:						
Concentrate, gross weight	metric tons	58,044	5,389	57,036	89,213	74,996
Zn content	do.	31,920	2,967	31,368	49,066	41,247
INDUSTRIAL MINERALS						
Barite	do.	15,360	12,841	8,011	530 r/	3,702
Cement, hydraulic 4/		4,566	4,424	4,588	4,864	5,409
Clays, for construction and clay products		3,175	3,280	3,478	3,670	3,870
Fertilizers:						
Triple-superphosphate		791	748	767	812	805
Phosphoric acid		1,093	984	1,184	1,208	1,043
Diammonium-phosphate		928	745	919	1,048	1,113
Ammonium nitrate		186	165	156	172	182
Fluorspar, acid grade	metric tons	720	1,426	1,190	520 r/	--
Gypsum e/ 5/		100	100	100	100	100
Lime		464	466	482	475	471
Phosphate rock, washed:						
Gross weight		7,167	6,941	7,901	8,006	8,339
P ₂ O ₅ content e/		2,150	2,140	2,370	2,400	2,500
Salt, marine		477	393	473	447 r/	481
MINERAL FUELS AND RELATED MATERIALS						
Gas, natural:						
Gross	million cubic meters	1,027	1,866	1,899	1,819	2,220
Dry e/	do.	800	1,500	1,500	1,450	1,750
Petroleum:						
Crude	thousand 42-gallon barrels	32,229	26,841	30,570	30,960	28,207
Refinery products:						
Liquefied petroleum gas	do.	1,573	1,353	1,473	1,288	1,279
Gasoline	do.	3,040	3,179	2,951	3,096	3,301
Kerosene	do.	1,012	827	978	1,194	1,216
Distillate fuel oil	do.	4,261	4,842	4,178	3,812	4,010
Residual fuel oil	do.	4,292	3,956	4,202	4,149	4,346
Other e/	do.	550 r/	2,000 r/	800	1,420 r/	940
Total e/	do.	14,700 r/	16,200 r/	14,600 r/	15,000 r/	15,100

e/ Estimated. r/ Revised. -- Zero.

1/ Data available as of March 30, 2001.

2/ Estimated data are rounded to no more than three significant digits; may not add to totals shown.

3/ In addition to the commodities listed, a variety of crude construction materials (sand and gravel and stone) was produced, but output was not reported, and available information was inadequate to make estimates of output.

4/ Includes white cement production, in thousand metric tons: 1996--168, 1997--155, 1998--167, 1999--192, and 2000--250.

5/ Does not include phosphatic gypsum (waste product) generated during fertilizer production.